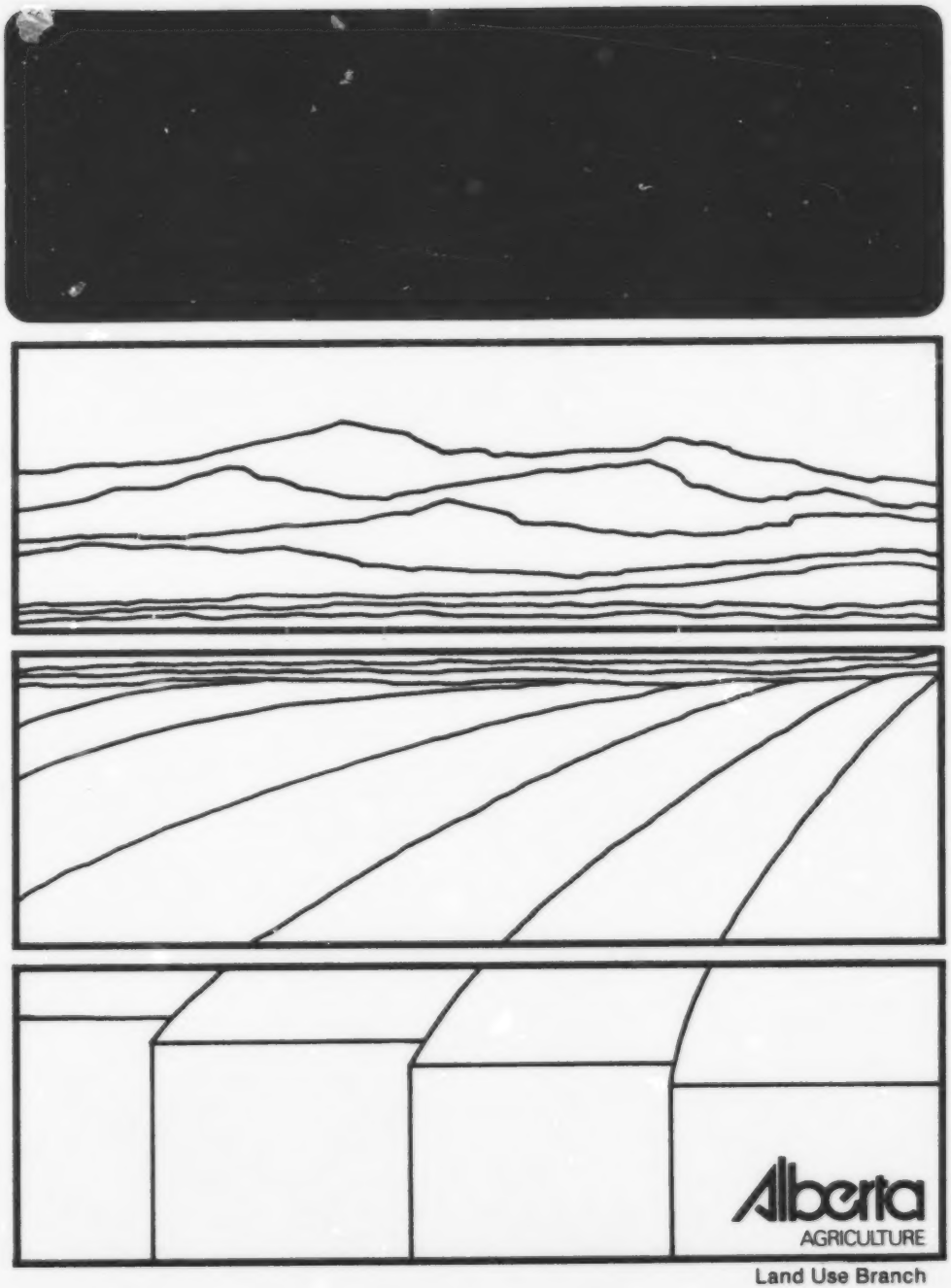


Alberta
AGRICULTURE

Land Use Branch

AGRICULTURAL LAND BASE MONITORING STUDY

(1982 - 1985)

R.L. Wehrhahn, P.Ag.
Land Use Branch
Alberta Agriculture

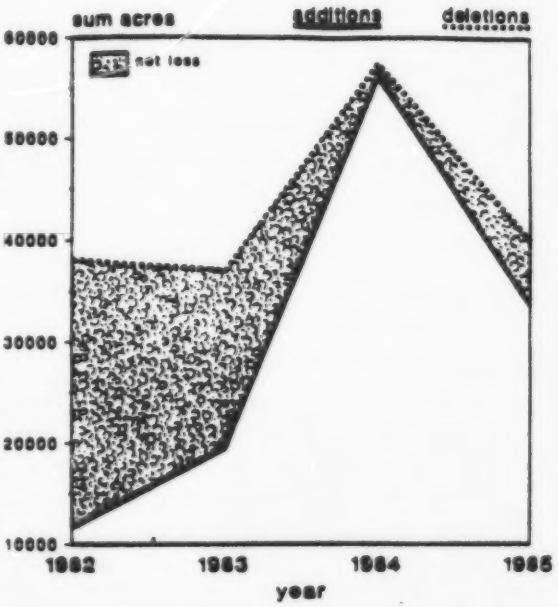
89-05695/

EXECUTIVE SUMMARY

The Agricultural Land Base Monitoring Study was designed to document provincial land use changes between 1982-1985 with regard to quantity, quality and location. Public Land Dispositions were primarily responsible for additions to the agricultural land base. On the removal side, Oil and Gas Well development and Annexation of urban land were the key contributors. Results show a net loss of 52 000 acres between 1982-1985. This figure is relatively insignificant in terms of total acres, representing only 0.1% of Alberta's 51 million acres of farmland (1986 Census).

In recent years competition from alternative land uses, such as urban expansion and non-renewable resource development have removed agricultural land from production. Although the total acreage figure reported in this study is small there are important implications associated with this trend. Acreage reductions have resulted in a net decrease in agricultural capability and a gradual shift in the geographical location of the province's agricultural land base. This trend will most certainly continue based on historic settlement patterns and the absence of higher capability lands for future development. Compensation for these losses by the addition of lower capability land will ultimately result in a land base of inferior quality for agricultural production.

Provincial Summary Of Additions And Deletions



Alberta's agricultural land base is not in jeopardy. However, if current land use trends are allowed to continue there may be significant long term impacts to the quality of Alberta's agricultural land base. Alberta's agricultural land base is a finite resource. Land use patterns need to be periodically examined and more emphasis placed on re-directing these activities to lower quality agricultural land. In this way, a productive agricultural land base can be assured for future generations.

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Acknowledgements

Grateful acknowledgement is due to the following agencies who provided data for this study:

1. Oldman River Regional Planning Commission (RPC), Southeast Alberta RPC, Palliser RPC, Calgary RPC, Red Deer RPC, Battle River RPC, Edmonton Metropolitan RPC, Yellowhead RPC, South Peace RPC, and Mackenzie RPC.

2. Alberta Municipal Affairs, Planning Services Division.

3. County of Parkland, County of Strathcona, County of Grande Prairie and Municipal District of Rockyview.

4. Municipal tax assessment offices.

5. Local Authorities Board, Department of Transportation, Energy Resources Conservation Board, Department of Environment, Department of Forestry, Lands and Wildlife.

The author also wishes to acknowledge Isabel Simons who directed the collection of data and provided valuable input throughout the study. Acknowledgement is also extended to the summer research assistants Shelly Weaver, Yvonne DeBoer and Lori Wakley for gathering data. Appreciation is extended to Rita Nelson for typing the report and to Jim Hiley and Mel Miller for providing valuable comments and suggestions throughout the study including review of the draft copy.

1. INTRODUCTION

Agriculture is the most extensive land use within the settled area of the province. In recent years, however, population increases have resulted in an accelerated demand for competing non-agricultural land uses. Competition from alternative uses, such as urban expansion and non-renewable resource development, have begun to erode Alberta's limited supply of higher capability (CLI 1-3) agricultural lands. Alberta's agricultural land base is a finite resource. The loss of these lands cannot be adequately compensated by the addition of marginal lands (in terms of lower natural productivity and climatic risk) along the fringe of the settled land base. Accurate information on land use changes affecting agriculture is required for informed public debate and for design of appropriate government policy.

Recent studies have examined the importance of maintaining and expanding Alberta's agricultural land base. The Environment Council of Alberta (ECA) conducted Hearings in 1982, addressing a number of topics affecting the long term viability of the agricultural land base. Concluding with a number of recommendations, the ECA called for the establishment of a group to audit the use of agricultural land for non-agricultural purposes. In 1982, the Resource Economic Branch of Alberta Agriculture released a report entitled "An Inventory of Changes in Alberta's Agricultural Land Base Between 1976 and 1980" (Birch, 1981). The report was updated to include 1981 figures (Woloshyn, 1983). These reports inventoried land use activities and summarized acreages in terms of additions and deletions to the agricultural land base. During the period 1976-1980 approximately 400 000 acres were added to and deleted from the agricultural land base. Although no significant net loss of agricultural lands were recorded, changes in land use have resulted in a net loss in agricultural productivity as higher capability CLI class 1, 2 and 3 lands removed from production were replaced by lower capability CLI class 4 and 5 lands.

The objective of the present study is to document provincial land use changes between 1982 and 1985 with regard to quantity and quality of land. The study is designed to update the work previously undertaken by Birch and Woloshyn. Periodic updates to this information base provide Alberta Agriculture with a tool for long term planning. The study area includes all land within the Provincial White Area (Figure 1) except that which is under Federal jurisdiction.

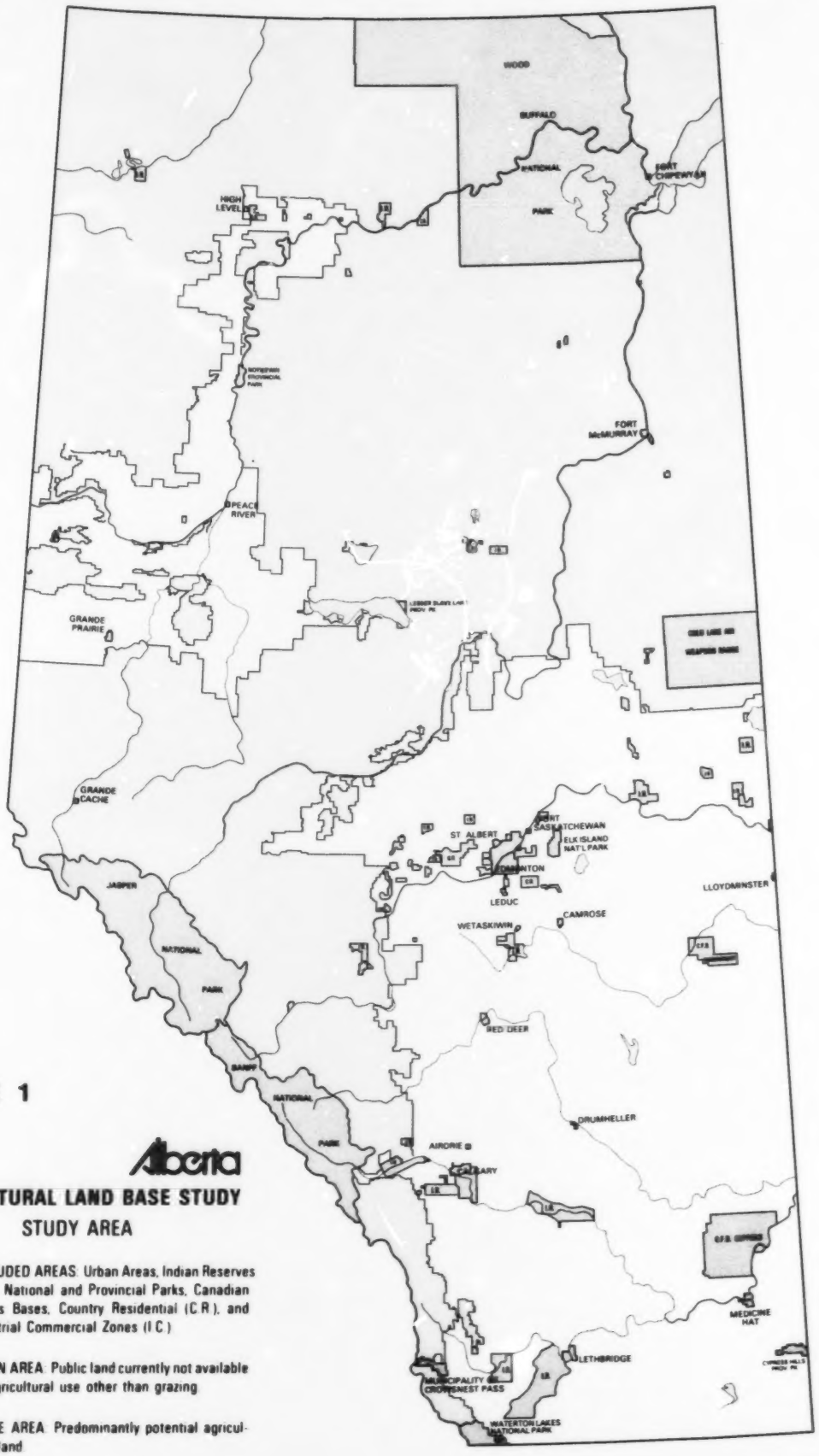


FIGURE 1

Alberta

AGRICULTURAL LAND BASE STUDY

STUDY AREA

EXCLUDED AREAS: Urban Areas, Indian Reserves (I.R.), National and Provincial Parks, Canadian Forces Bases, Country Residential (C.R.), and Industrial Commercial Zones (I.C.)

GREEN AREA: Public land currently not available for agricultural use other than grazing

WHITE AREA: Predominantly potential agricultural land

PRODUCED BY THE RESOURCE EVALUATION AND PLANNING DIVISION, ALBERTA ENERGY AND NATURAL RESOURCES, 1985

2. METHODS

The study examined land use activities resulting in additions or deletions to the agricultural land base between January 1, 1982 and December 31, 1985. An evaluation of data requirements was completed prior to initiating the study. Contacts were established with appropriate agencies, and agreements were made to collect available data during the summer of 1986. Data was collected manually with the exception of a few agencies which forwarded hard copy printouts or computer tapes.

In order to allow an accurate determination of historical and geographical trends a broad range of data was collected. Table 1 lists the agencies contacted and the land use activities examined. Both the quantity and quality of land being added to or removed from the agricultural land base were considered to be important. The following information was uniformly collected for each parcel inventoried:

Location (Municipality)
Legal Location (to the quarter section)
Year (January 1, 1982 - December 31, 1985)
Acreage
CLI Classification for Agriculture

A number of additional land use activities examined in the initial stages of the study were subsequently deleted or given only a cursory investigation. In the case of Grazing Leases, the information was determined to be of minor importance in terms of the net acreage change. Land use activities, such as Sand and Gravel Pits which constitute only a minor acreage, were not included in the summary. Pipeline construciton is an important activity but results in a very temporary loss to the land base. At the same time, Transmission Lines constitute an inconvenience to agricultural activity rather than a significant loss of agricultural production. An overview of Pipeline and Transmission line construction activity appears in Appendix 5.1.

Some anomolies occur which result in either an over or underestimation of acreage loss. The net result, however, is considered to be minimal.

Examples include:

(1) De-registered Subdivisions - parcels could not be accounted for.

(2) Farmstead Separation - activity may not result in an actual loss of agricultural land.

(3) Urban Annexations - land may not be immediately removed from agricultural production.

(4) Fragmented Parcels - do not require subdivision approving authority and were, therefore, not included.

Table 1. Categories and Source of Land Use Activities

Activity	Source	Comments
A. Additions to the Land Base		
1. Crown Land Dispositions	Public Lands Division, Alberta Forestry Lands and Wildlife	Dispositions included in this study are for annual cropping purposes only and are considered to be a permanent land use change.
a. Farm Development Sale		
b. Homestead Sale (discontinued July/84)		
c. Farm Development Lease (with or without option to purchase)		
2. Reclaimed Coal Mines	Reclamation Division, Alberta Environment	Whitewood Mine -TransAlta Utilities Ltd. Highvale Mine - TransAlta Utilities Ltd. Diplomat Mine - Luscar Coal Co. Paintearth Mine - Luscar Coal Co. Vesta Mine - Manalta Coal Ltd. Montgomery - Sheerness - Manalta Coal Ltd. CLI for agriculture not available
3. Abandoned Wellsites	Energy Resources Conservation Board and SIDMAP (Soil Inventory Database for Management and Planning)	It is assumed that abandoned wellsites will be reclaimed within a 2-3 year time period. ERCB staff estimated average wellsite size to be four acres.

Activity	Source	Comments
B. Deletions from the Land Base		
1. Registered Subdivisions	Subdivision, Approving Authorities, Planning Commissions or Municipalities	Registered means that the Subdivision process is complete and the parcel has been registered with Land Titles. Registration must have occurred between January 1, 1982 and December 31, 1985. Only applications with a prior use of agriculture and an intended use other than agriculture were recorded.
a. Country Residential/ Farmsite Separation		
b. Multi-Parcel Country Residence		
c. Commercial/Industrial		See Appendix 5.2 for detailed information on Subdivision activity.
d. Public Institutional		
e. Sewage Lagoon/Waste Disposal		
f. Private Recreational		
g. Country Estate		
h. Mobilehome Park		
i. Other (municipal wells, wildlife conservation etc.)		
2. Annexation by Urban Centres	Local Authorities Board	The assumption was made that all land annexed by urban areas was removed from agriculture on the day of annexation.
3. Oil and Gas Wells	Energy Resources Conservation Board and SIDMAP	Average wellsite size was estimated to be four acres.
4. Surface Coal Mines	Reclamation Division, Alberta Environment	See Reclaimed Coal Mines

Deletions continued

Activity	Source	Comments
5. Transportation	Municipal Services Division, Alberta Transportation	Acreage calculations include area of local road expansion plus 100 acres per municipality, accounting for primary and secondary roads (personal communication, Alberta Transportation staff). Acreage was averaged over the 4 year time period. No CLI for agriculture available.
6. Industrial Sites	Energy Resources Conservation Board	Includes processing plants and industrial development permits. Acreages were estimated for leased land area from the maximum output capacity of the plant (personal communication, ERCB staff).

3. RESULTS

The results presented in this section show provincial trends and patterns with regard to land use conversion activity. The data is shown in terms of activities leading to land base additions or deletions and are reported by total acres. Key areas of analysis include a Provincial Summary, summaries by Year, CLI Capability for Agriculture, Parcel Size and Geographic Location.

3.1 Net Acreage Summary

Total acreage of additions and deletions affecting agricultural land in the province was relatively minor between 1982 and 1985. Total additions over this time period were approximately 120 000 acres and deletions were close to 173 000 acres. Final results indicate a net loss of only 52 000 acres. This figure represents approximately 0.1% of Alberta's 51 million acres of farmland (1986 Census).

Additions to the agricultural land base resulted primarily from Public Land Dispositions. These dispositions accounted for 84% or 102 006 acres. On the removals side, Oil and Gas Well development and Annexation of urban land were the key contributors. These two activities accounted for 71% of the removals or 123 406 acres. The results and relative importance of each activity as a percentage of total additions and deletions are illustrated in Table 2.

Total removals remain quite stable over the four year period, except 1984, which due to an increase in annexation activity, shows a larger acreage figure. Removals range from a low of 37 018 in 1983 to a high of 57 503 in 1984, averaging approximately 43 000 acres per year. Major contributors include Oil and Gas Wells which remain relatively constant and Urban Annexations which show higher variability. Minor contributors include Transportation and Non-Agricultural Subdivisions. Subdivision activity decreased over the four year time frame due primarily to a decreased demand for country residential parcels.

Additions to the land base range from a low of 11 686 acres in 1982 to a high 55 731 acres in 1984, averaging approximately 30 000 acres per year. The exceptionally large acreage in 1984 can be directly related to an initiative by the Public Lands Division to accelerate the sale of public land. Since this time, the rate of transfer has decreased and is expected to continue decreasing due both to a lower demand for land and a change in priorities by the Public Lands Division. Additions of agricultural land through the abandonment of wellsites shows a slow but steady increase over the 1982-85 time period. This reflects a slowdown in the Oil and Gas industry at that time.

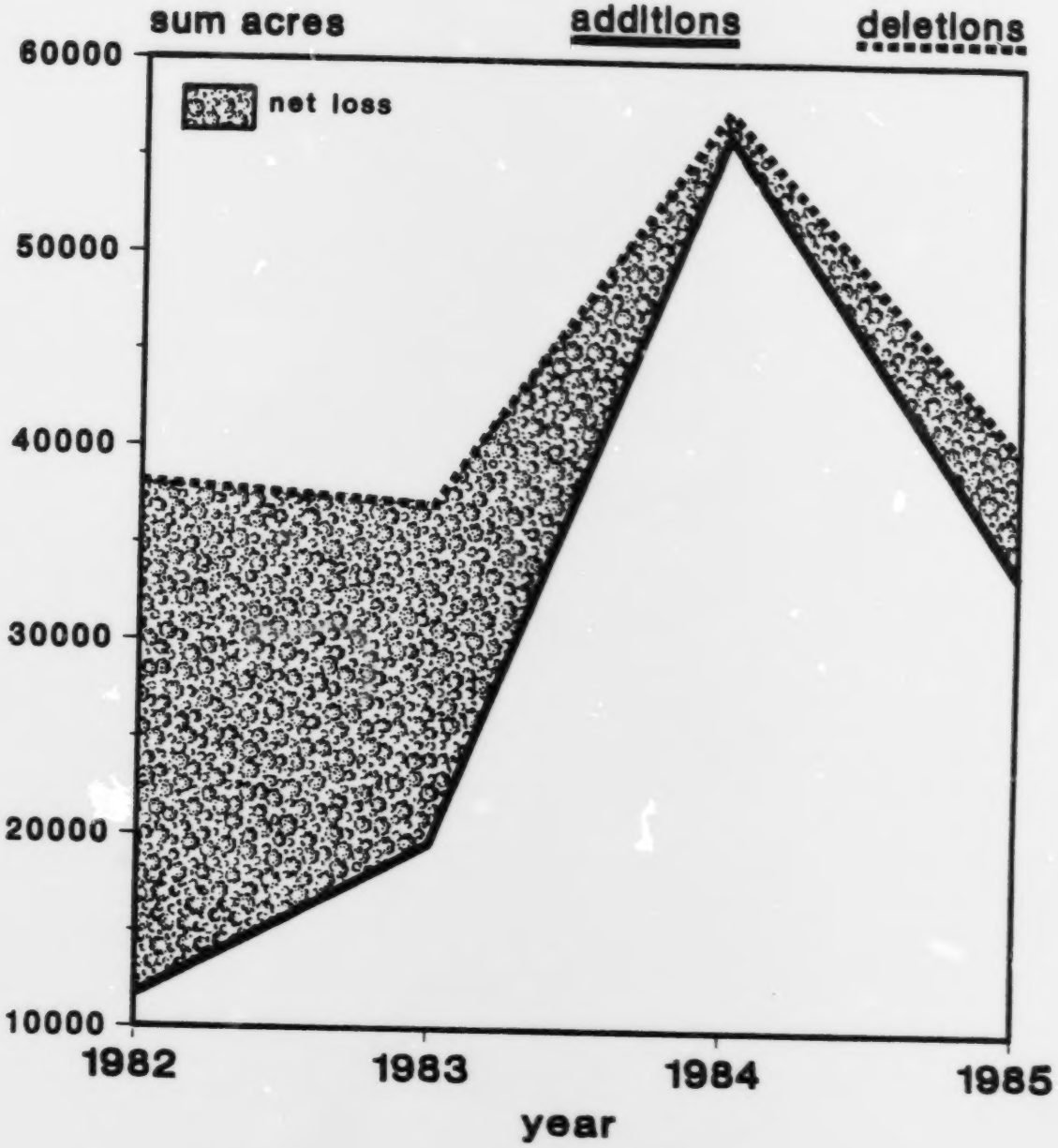
Figure 2 highlights the net difference in additions and deletions by year. Land use changes show considerable variation on a yearly basis between 1982 and 1985. The cummulative result, however, is a net loss in each year. The year 1982 has the highest negative balance of -26 431 acres and 1984 the least with -1 772 acres. The magnitude of the difference results primarily from varying acreage figures on the additions side particularly in terms of Public Land Dispositions.

Table 2 Agricultural Land Use Changes in Alberta (Acres)

Activity	1982	1983	1984	1985	Total	%	Average
A. Additions of Agricultural Land							
1. Reclaimed Strip Mines	529	346	753	297	1 925	2	481
2. Abandoned Wellsites	3 857	3 197	4 653	4 829	16 536	14	4 134
3. Public Land Dispositions	7 300	15 880	50 325	28 501	102 006	84	25 501
Total Additions	11 686	19 423	55 731	33 627	120 467	100	30 117
B. Removals of Agricultural Land							
1. Coal Strip Mines	671	521	622	730	2 544	1	636
2. Industrial Plants	2 235	404	502	1 162	4 303	3	1 075
3. Transportation[1]	4 305	4 305	4 305	4 305	17 220	10	4 302
4. Non-agricultural Subdivision	8 593	6 904	5 297	4 308	25 102	15	6 275
5. Urban Annexation	6 110	12 677	29 734	5 612	54 133	31	13 533
6. Oil and Gas Wells	16 203	12 207	17 043	23 819	69 272	40	17 318
Total Removals	38 117	37 018	57 503	39 936	172 574	100	43 144
Net Changes	-26 431	-17 595	-1 772	-63 09	-52 108		-13 027

[1] Yearly information is not available, therefore, estimates were averaged over the four years.

Figure 2
Provincial Summary Of Additions And Deletions



3.2 CLI Capability for Agriculture

The CLI Soil Capability for Agriculture classification groups mineral soils into seven classes according to their potentials and limitations for agriculture. In viewing additions and deletions to the agricultural land base, quality of land is as, if not more, important than quantity because it gives an indication of the ultimate differences in agricultural productivity. CLI classes 1, 2 and 3 are considered to have the highest capability for grain and mixed farming operations. This means there is more flexibility in crop choice and rotation systems, as well as an associated higher natural productivity. CLI class 4 has lower natural productivity and is marginal in terms of the number and type of annual crops it can maintain. Class 5, 6 and 7 have no capability for annual crop production, although they have potential for improved or unimproved pasture.[1] A summary of the CLI capability classification is provided below.

CLI 1 - no significant limitation to crop production
- 1% of Alberta's surveyed land base

CLI 2 - moderate limitations that restrict the range of crops or require conservation practises
- 6% of Alberta's surveyed land base

CLI 3 - moderately severe limitations that restrict the range of crops or require special conservation practises
- 10% of Alberta's surveyed land base

CLI 4 - severe limitations in terms of crop restriction, conservation requirements or both
- 16% of Alberta's surveyed land base

CLI 5 - restricted to perennial forages with improvements feasible
- 19% of Alberta's surveyed land base.

CLI 6 - best as native range
- 5% of Alberta's surveyed land base

CLI 7 - no capability for agriculture
and - other remaining 36% of Alberta's surveyed land base.

CLI Soil Capability for Agriculture was not intended to be a classification of crop productivity, although a relationship does exist. In order to better understand the impacts of lost higher capability agricultural land, it is necessary to relate the CLI capability system to

[1] CLI was designed to indicate regional capabilities, not site specific classifications. Therefore, it must be cautioned that CLI ratings obtained from files or 250 000 map sheets may not be representative of the site location of the particular activity.

some scale of productivity. Dr. F. Bently, formerly of the University of Alberta Soil Branch, contends through his studies that as one moves to lower class land (under the CLI system) the cost to produce equivalent yields increases axiomatically. For example, studies conducted on various field crops revealed that for the same amount of input, (fertilizer, etc.) the yields varied in direct correspondence to the soil classification as follows:

CLI Class	1	2	3	4
Yield	100%	80% of CLI 1	65% of CLI 1	50% of CLI 1

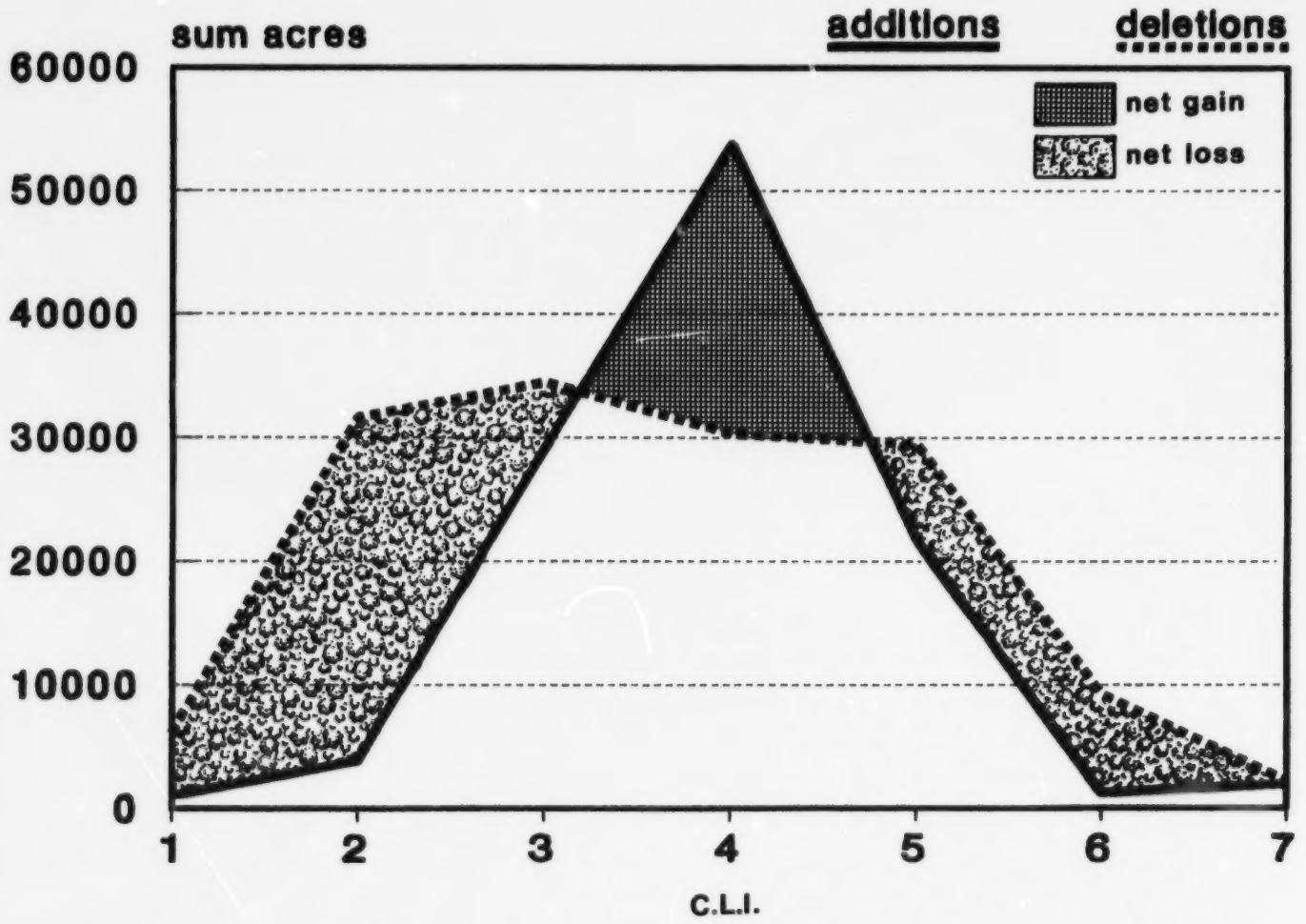
The results of this study show a net loss of higher capability (CLI 1, 2, 3) land and a net gain in marginal (CLI 4) land. Between 1982-1985 there was a net loss of almost 38 000 acres of CLI 1-3 land. Land in the marginal CLI 4 category shows a net gain of over 23 000 acres. Table 3 summarizes the activities by CLI class and Figure 3 highlights the results. Although the total acreage figures are small over this four year time frame, the trend is significant from the point of a cummulative reduction in the natural productivity of the agriclutural land base. Removing the most productivive lands in the province also removes the most economically profitable land from farmers. Replacement of CLI 1-3 land with lower capability lands cannot offset the overall loss in agricultural capability and productivity. Land development for non-agricultural purposes will continue as the province continues to grow. Any land lost will almost certainly be replaced with marginal quality agricultural land as more than 95% of the provincial higher capability (CLI 1-3) lands are currently developed. Any future developments should, therefore, be directed towards lower capability lands.

Table 3

Land Use Changes by C.L.I. Class (1982-1985)
(Acres)

Activity	C.L.I. Class 1	2	3	4	5	6	7	Other	Total
A. Additions of Agricultural Land									
1. Reclaimed Strip Mines	--	--	--	--	--	--	--	1 925	1 925
2. Abandoned Wellsites	520	2 824	3 820	4 360	3 420	804	328	460	16 536
3. Public Land Dispositions	535	1 084	25 407	49 463	18 259	434	1 647	5 117	102 006
Total Additions	1 055	3 908	29 227	53 823	21 679	1 238	1 975	7 562	120 467
(%)	1%	3%	24%	45%	18%	1%	2%	6%	(100%)
B. Removals of Agricultural Land	1	2	3	4	5	6	7	Other	Total
1. Coal Strip Mines	--	--	--	--	--	--		2 544	2 544
2. Industrial Plants	73	1 027	1 231	1 091	364	206		311	4 303
3. Transportation	--	--	--	--	--	--		17 220	17 220
4. Non-agricultural Subdiv.	1 048	5 950	6 583	6 789	3 491	974	136	131	25 102
5. Urban Annexation	3 619	13 296	12 267	6 568	7 435	4 493	1 017	5 438	54 133
6. Oil and Gas Wells	1 428	11 364	14 408	15 868	18 168	3 552	1 060	3 425	69 273
Total Removals	6 168	31 637	34 489	30 316	29 458	9 225	2 213	29 069	172 575
(%)	4%	18%	20%	18%	17%	5%	1%	17%	(100%)
C. Net Change	-5 113	-27 729	-5 262	23 507	-7 779	-7 987	-238	-21 507	-52 108

Figure 3
Additions And Deletions By C.L.I.



3.3 Parcel Size

Examination of parcel size gives an indication of the effect the additions and deletions discussed in this report have on traditional patterns of agricultural land use. Eighty acre parcels are considered the minimum agricultural parcel size for extensive agricultural pursuits and, therefore, comparisions are made on this basis.

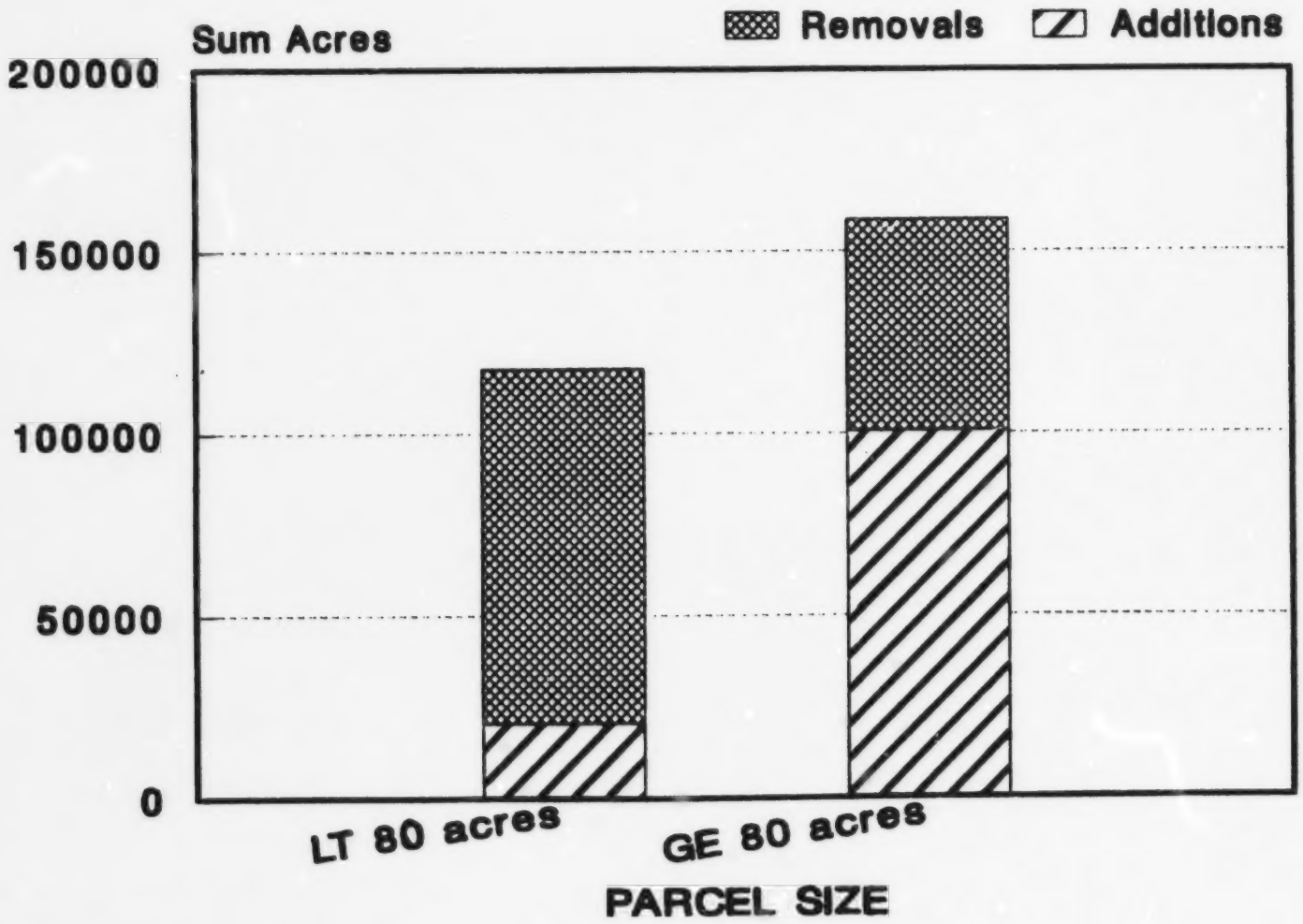
Eighty-three percent of all additions to the land base occur on parcels greater than or equal to 80 acres. This implies that these parcels, occurring primarily on the fringe of the agricultural land base, are well suited to traditional agricultural operations. However, well over half, 63%, of all removals from the agricultural land base occur on parcels less than 80 acres in size. Over time the removal of these small parcels to non-agricultural uses may result in greater fragmentation of the settled land area. This type of fragmentation can result in increased land value beyond the agricultural production value. It may also result in increased conflicts between agricultural and non-agriucltural land uses. Finally, increased fragmentation moves against the trend towards larger farm operations. Table 4 outlines additions and deletions in terms of parcel size. The net result over the time period 1982-1985 was a gain of 42 550 acres in parcels of 80 acres and larger and a loss of 76 800 acres in parcels under 80 acres in size. Figure 4 highlights these results.

Table 4
Land Use Changes by Parcel Size
(Acres)

Activity	Parcel Size (acres)		
	less than 80	greater than or equal to 80	Total
A. Additions of Agricultural Land			
1. Reclaimed Strip Mines	199	1 726	1 925
2. Abandoned Wellsites	16 536	--	16 536
3. Public Land Dispositions	3 669	98 337	102 006
Total Additions	20 489	100 616	121 105
B. Removals of Agricultural Land			
1. Coal Strip Mines	140	2 404	2 544
2. Industrial Plants	2 383	1 920	4 303
'3. Transportation	--	--	--
4. Non-agricultural Subdivisions	22 294	2 808	25 102
5. Urban Annexation	3 199	50 934	54 133
6. Oil and Gas Wells	69 273	--	69 273
Total Removals	97 289	58 066	155 355
C. Net Change	-76 800	42 550	-34 250'

'Parcel Size Categories for Transportation cannot be determined and therefore the total Net Change is only -34 250.

Figure 4
Additions And Deletions By Parcel Size



3.4 Geographical Distribution

In order to analyze the geographical distribution of land use changes and to isolate land development trends, the province has been separated into South, Central and Peace River Regions (Figure 5). Additions and deletions to the agricultural land base are also presented by Regional Planning Areas (Figure 6) to provide a more detailed picture.

The Peace River Region of the province is the only region to show a net gain of agricultural land. In fact, the Peace River Region shows a net gain of 82 656 acres, or 83% of all additions. The majority of this land has been added to the land base through Public Land Dispositions and are primarily lower capability agricultural lands. These additions are primarily restricted to the two most northern Regional Planning Commissions (ie. MacKenzie and South Peace). It can also be noted that almost half of the Planning Commission areas have no additions to the land base in terms of Public Land Dispositions.

Removals from the agricultural land base occur primarily in the South and Central Regions of the province. Together they account for over 90% of the removals, or 88 999 and 66 492 acres respectively. The demand of agricultural land for non-agricultural uses in these two regions is substantially higher than in the Peace River. Table 5 outlines the results by Region and Table 6 show acreage figures by Regional Planning Area. Figures 7 and 8 highlight these results.

There are two major implications associated with this pattern. First, the addition of agricultural land in the Peace River area and loss of agricultural land in the South and Central Regions implies a change in the quality of the agricultural land base. Much of the better quality agricultural land being removed from production occurs in the South and Central Regions. Conversely, more marginal agricultural land in the Peace River area of the province is being brought into production. The second implication relates to transportation costs associated with the change in geographic location of agricultural production. Higher costs are incurred with transporting products from the Peace River area because of the increased distance to potential markets.

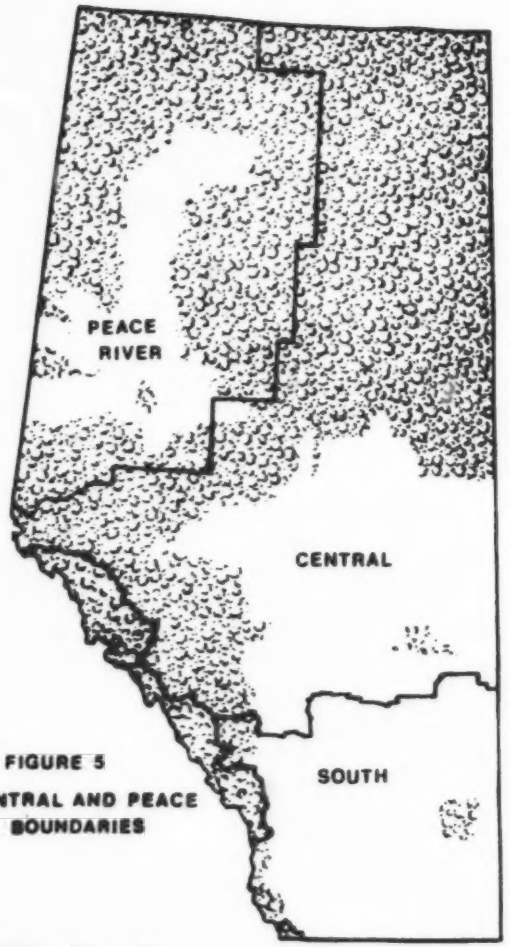


FIGURE 5
SOUTH, CENTRAL AND PEACE
RIVER BOUNDARIES

FIGURE 6
REGIONAL PLANNING
AREA BOUNDARIES

Table 5
Land Use Changes by Region

Activity	Southern Region	Central Region	Peace River Region	Total
A. Additions to Agricultural Land				
1. Reclaimed Strip Mines	144	1 781		1 925
2. Abandoned Wellsites	5 184	8 916	2 436	16 536
3. Public Land Dispositions	473	4 230	97 303	102 006
Total Additions	5 801	14 927	99 739	120 467
B. Removals from Agricultural Land	Southern Region	Central Region	Peace River Region	Total
1. Coal Strip Mines	270	2 274	--	2 544
2. Industrial Plants	1 396	2 543	363	4 302
3. Transportation	4 457	9 534	3 228	17 219
4. Non-Agricultural Subdivisions	3 733	16 677	4 692	25 102
5. Urban Annexations	37 555	15 210	1 368	54 133
6. Oil and Gas Wells	19 081	42 761	7 432	69 274
Total Removals	66 492	88 999	17 083	172 574
C. Net Change	-60 691	-74 072	82 656	-52 107

Table 6

Land Base Changes by Regional Planning Areas

Activity	Battle River	Calgary	Edmonton Metro	MacKenzie	Municipal Affairs	Oldman River	Palliser	Red Deer	S.E. Alberta	South Peace	Yellow-head	Total
A. Additions to Agricultural Land												
1. Reclaimed Strip Mines	759	--	--	--	--	--	144	204	--	--	818	1 925
2. Abandoned Wellsites	1 180	212	520	612	3 492	2 292	1 484	2 132	1 196	1 824	1 592	16 536
3. Public Land Dispositions	--	157	1 115	86 466	1 954	316	--	--	--10	837	1 161	102 006
Total Additions	1 939	369	1 635	87 078	5 446	2 608	1 628	2 336	1 196	12 661	3 571	120 467
B. Removals of Agricultural Land												
1. Coal Strip Mines	460	--	--	--	--	--	270	454	--	--	1360	2 544
2. Industrial Plants	109	138	1 468	88	169	534	506	712	218	275	85	4 302
3. Transportation	612	346	842	956	4 832	1 308	1 547	939	1 256	2 272	2 309	17 219
4. Non-agricultural Subdivision	2 250	1 112	1 369	2 214	6 852	1 076	712	2 834	833	2 478	3 372	25 102
5. Urban Annexations	703	10 618	2 338	1 366	3 976	17 807	2 578	421	6 552	2	7 772	54 133
6. Oil and Gas Wells	5 296	1 348	2 084	1 588	21 696	3 620	5 797	8 668	8 316	5 844	5 017	69 274
Total Removals	9 430	13 562	8 101	6 212	37 525	24 345	11 410	14 028	17 175	10 872	19 914	172 574
C. Net Change	-7 491	-13 193	-6 466	+80 866	-32 079	-21 737	-9 782	-11 692	-15 979	+1 789	-16 343	-52 107

Figure 7
Net Changes By Regions

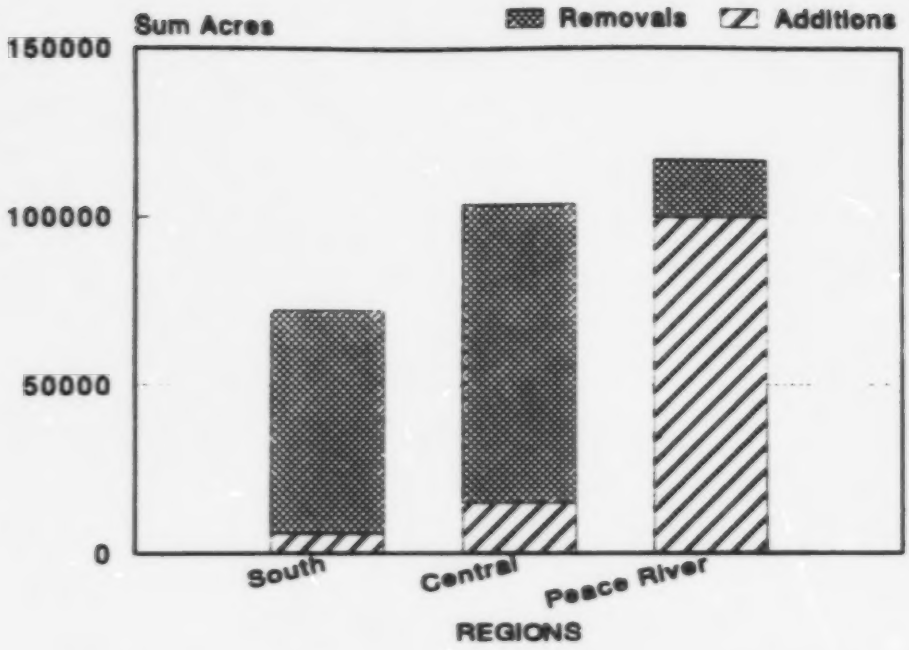
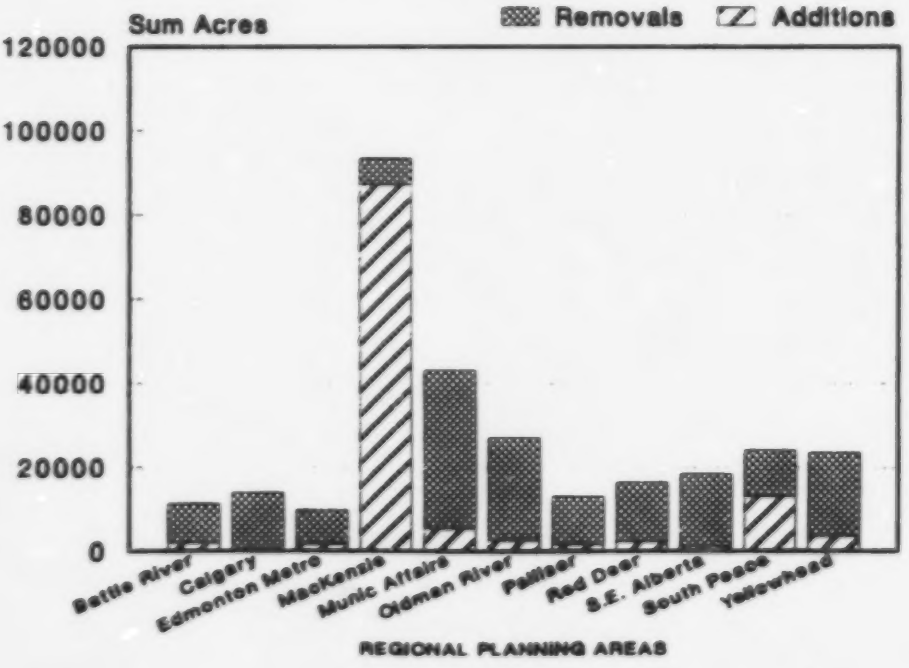


Figure 8
Net Changes By Regional Planning Areas



4. SUMMARY AND CONCLUSIONS

Analysis of additions and deletions to the agricultural land base reveal a number of important trends. First, the overall numbers are relatively small in terms of the provincial land base. This is symptomatic of the economic slowdown between 1982-1985. During this time period there was a net loss of 52 000 acres, which represents only 0.1% of Alberta's 50 million acres of farmland. This would indicate that the current loss of agricultural land to competing uses is not a major problem. The long-term quality of Alberta's agricultural land base, however, is slowly changing from one of high capability to one of lower natural capability for agricultural production. There is a documented trend to develop CLI classes 1, 2 and 3 lands for non-agricultural purposes, while CLI 4 and 5 lands are brought into agricultural development to take their place. The declining quality of the agricultural land base has implications with respect to production costs, productivity levels and ultimately to the long-term viability of the agricultural industry.

Additions, to the agricultural land base totalled approximately 121 000 acres. These parcels were primarily lower capability, CLI class 3, 4 and 5 lands located along the fringe of the developed land base in north and northwest Alberta. Additions, which were primarily the result of Public Land Dispositions, normally occurred as parcels larger than a quarter section (160 acres) in size. Removals from the agricultural land base, totalling 173 000 acres were mainly higher capability CLI class 1, 2, and 3 lands. Two activities, namely Oil and Gas Well activity is associated with the removal of a large number of parcels of small acreage size. These parcels occur throughout the province. Urban Annexations tend to be large parcels and occur exclusively in the settled areas of the province.

The Resource Economics Branch of Alberta Agriculture previously completed two similar land use inventories to the one discussed in this report for the time period 1976-1980 (Birch, 1981) and 1981 (Woloshyn, 1983). Compiling the results from both studies allows the examination of trends over the past 10 years. Different methods of data collection account for differences in the results of these studies. These differences in data collection account on whole for at least 20% of the total acreages reported in the previous studies and those reported in this study (Figures 9 and 10). However, the results of both studies indicate that removals from the agricultural land base are consistently greater than additions.

Two major differences in data collection were noted. First, the Birch-Woloshyn studies collected all Public Land Dispositions, including those not leading to title such as grazing leases. The current study collected only those dispositions leading to title.

Secondly, the Birch-Woloshyn studies collected Non-Agricultural Subdivision data on approved applications while this study inventoried only registered titles. Since only a certain percentage of approved

Figure 9
Additions And Deletions On Better Agricultural Land (1976-1985)
(C.L.I. 1-3)

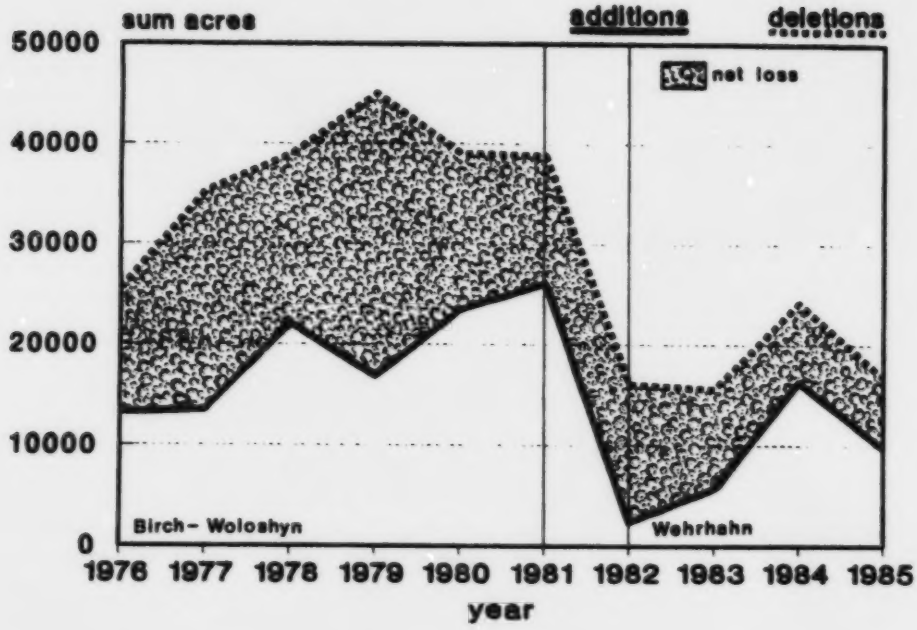
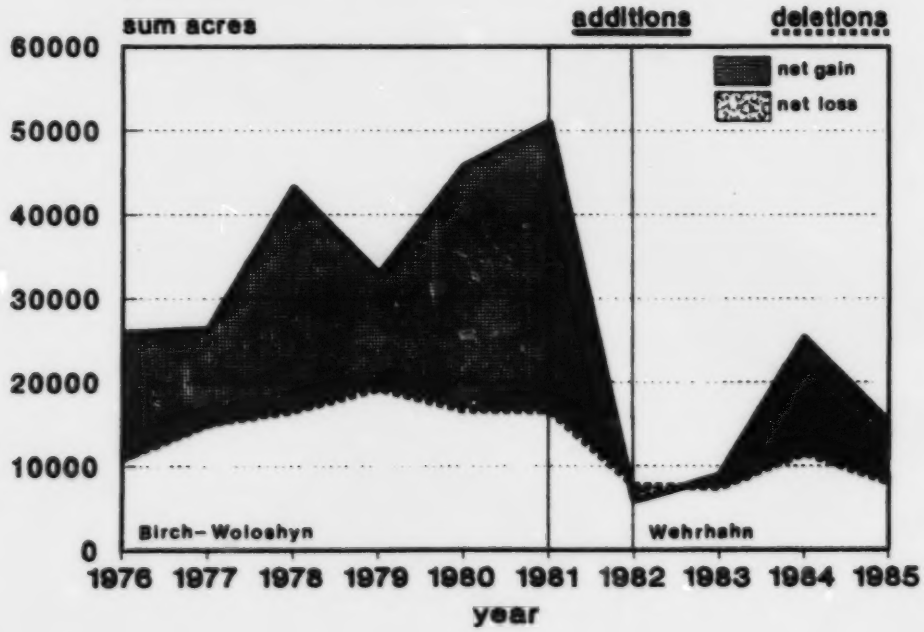


Figure 10
Additions And Deletions On Marginal Agricultural Land (1976-1985)
(C.L.I. 4)



Subdivision applications actually get registered, the numbers presented in the earlier reports are higher overall. Figures 9 and 10 display net additions and deletions on better and marginal agricultural land respectively.

Between 1976-1985, an average of 45% of all removals occurred on better quality arable (CLI 1-3) agricultural lands while only 20% of all additions occurred on these quality lands. In contrast, the figures on marginal (CLI 4) arable lands are reversed. Removals represented 26% of the total acreage figure on marginal agricultural land while additions averaged 45%. Also associated with this trend is a shift in the geographical location of additions to the province's agricultural land base. Additions occur predominantly in the northern region while removals occur in the South and Central Region. This is important in terms of reduced natural capability, climatic risk, distance to markets, limitations in crop selection and ultimately profitability.

In conclusion, Alberta's agricultural land base is not in jeopardy. However, if current land use trends continue unchecked there may be significant long term impacts to the quality of Alberta's agricultural land base. Although the magnitude of land use changes has been relatively small over the past four years, it is evident that the quality of the agricultural land base is slowly deteriorating. In addition, it is anticipated that the economic conditions responsible, in part, for the decrease in demand for agricultural land will be reversed. As the province's general economy improves, the demand for agricultural land for non-agricultural purposes will increase. Historic patterns indicate that settlement generally occurs on or around the highest capability agricultural lands. For this reason agricultural lands will continue to be lost to competing non-agricultural uses around settled areas. Alberta's agricultural land base is a finite resource which must be managed wisely. Almost all of Alberta's better quality agricultural land have already been developed for agricultural production. Therefore, any land lost can only be replaced with lower capability land. In order to allow non-agricultural developments to occur, while ensuring the long term viability of Alberta's agricultural land base, it is recommended that policy discussions stress that these developments be directed towards lower quality agricultural land.

Appendix 5.1

Other Non-Agricultural Uses by Year

Year	Total Electric Transmission and Distribution Lines (circuit kilometers)	Pipelines (kilometers)
1982	158 015	10 000
1983	162 309	10 000
1984	164 389	8 000
1985	167 463	9 000
Total	652 176	37 000

Appendix 5.2

A.O Summary of Non-agricultural Subdivision Activity by R.P.C. (Acres)

Subdivision Activity	Regional Planning Commission				
	Battle River	Calgary	Edmonton Metropolitan	MacKenzie	Municipal Affairs
Single Parcel C.R.	1 008	817	686	1931	4 708
Multi Parcel C.R.	613	154	188	141	1 269
Comm-Industrial	256	42	138	41	413
Pub-Industrial	107	93	16	101	155
Hamlet Expansion	10	--	--	--	--
Waste Disposal	75		69		219
Private Recreational	181		160		50
Int. Agriculture	--	--	--	--	19
Mobile Home Park	--	--	111	--	--
Other	--	7	--	--	18

A.1 Summary of Non-agricultural Subdivision Activity by R.P.C. continued (Acres)

Subdivision Activity	Regional Planning Commision					
	Oldman River	Palliser	Red Deer	S.E. Alberta	South Peace	Yellowhead
Single Parcel C.R.	751	588	1 730	178	2 075	1 990
Multi Parcel C.R.	62	--	287	243	164	997
Comm-Industrial	174	99	503	296	180	133
Pub-Institutional	32	--	45	75	3	6
Hamlet Expansion	0	0	0	0	0	0
Waste Disposal	58	20	25	20	56	50
Private Recreational	0	4	201	--	--	197
Int. Agriculture	0	0	0	0	0	0
Mobile Home Park	0	0	0	0	0	0
Other	0	1	44	0	0	0

B.O Single Parcel Country Residential
RPC by Year (Acres)

Regional Planning Commission	Year			
	82	83	84	85
Battle River	242	302	226	239
Calgary	312	124	128	253
Edmonton Metropolitan	162	237	182	106
MacKenzie	258	586	642	446
Municipal Affairs	1 841	1 063	974	830
Oldman River	260	195	173	123
Palliser	140	209	133	106
Red Deer	550	459	377	344
SE Alberta	108	48	24	18
S Peace	717	498	458	401
Yellowhead	546	646	519	278

B.1 Multi Parcel Country Residential
RPC by Year (Acres)

Regional Planning Commission	Year			
	82	83	84	85
Battle River	142	454	17	0
Calgary	0	74	0	80
Edmonton Metropolitan	8	89	0	91
MacKenzie	31	54	56	0
Municipal Affairs	724	324	204	18
Oldman River	0	36	26	0
Palliser	0	0	0	0
Red Deer	107	55	106	19
SE Alberta	57	187	0	0
S Peace	43	40	9	71
Yellowhead	603	59	131	204

B.2 Other Non-Agricultural Subdivision Activity
RPC by Year (Acres)

Regional Planning Commission	Year			
	82	83	84	85
Battle River	361	162	81	24
Calgary	--	17	27	98
Edmonton Metropolitan	266	109	119	--
MacKenzie	--	42	44	56
Municipal Affairs	277	194	181	222
Oldman River	85	36	102	25
Palliser	--	29	94	1
Red Deer	284	343	133	59
SE Alberta	127	217	29	18
S Peace	92	7	10	134
Yellowhead	254	12	93	26

C.0 Single Parcel Country Residential
RPC by CLI (Acres)

Regional Planning Commission	C.L.I. Classification							
	1	2	3	4	5	6	7	Organic
Battle River	95	263	274	143	83	50	0	0
Calgary	49	154	288	158	157	10	0	0
Edmonton Metropolitan	127	137	248	132	28	9	0	5
MacKenzie	0	561	765	474	63	27	34	7
Municipal Affairs	71	1031	1569	1367	525	131	5	8
Oldman River	31	452	160	62	35	6	5	0
Palliser	72	125	192	146	6	44	4	0
Red Deer	90	380	309	412	381	153	4	0
SE Alberta	35	58	43	48	10	4	0	0
S Peace	5	736	784	377	74	36	50	12
Yellowhead	8	211	483	949	216	57	4	61

C.1 Multi Parcel Country Residential
RPC by CLI (Acres)

Regional Planning Commission	C.L.I. Classification							
	1	2	3	4	5	6	7	Organic
Battle River	0	75	432	6	83	0	0	0
Calgary	0	0	0	0	132	22	0	0
Edmonton Metropolitan	0	0	0	100	89	0	0	0
MacKenzie	0	29	50	43	0	20	0	0
Municipal Affairs	0	6	35	501	584	115	0	28
Oldman River	0	36	26	0	0	0	0	0
Palliser	0	0	0	0	0	0	0	0
Red Deer	6	19	11	27	131	92	0	0
SE Alberta	20	7	38	82	92	15	0	0
S Peace	0	3	66	54	40	0	0	0
Yellowhead	0	11	67	515	223	152	28	0

C.2 Other Non-agricultural Subdivision Activity
RPC by CLI (Acres)

Regional Planning Commission	C.L.I. Classification							
	1	2	3	4	5	6	7	Organic
Battle River	0.3	220	133	255	21	--	--	--
Calgary	--	21	21	75	26	--	--	--
Edmonton Metropolitan	372	81	31	4	--	6	--	--
MacKenzie	--	47	85	8	0.2	--	2	--
Municipal Affairs	--	339	120	302	89	23	--	--
Oldman River	--	58	5	16	92	1	--	--
Palliser	--	5	38	39	41	1	--	--
Red Deer	0.6	461	86	51	202	--	--	--
SE Alberta	60	32	71	1071	57	--	--	--
S Peace	--	197	33	--	10	--	--	--
Yellowhead	5	1	124	246	--	--	--	10

D.0 Single Parcel Country Residential
RPC by Farmland Assessment (quarter) (Acres)

	Bush	Farmsite	Slough	07-30	31-50	51-60	61-70	71-80	81-90	91-99
Battle River	148	17	0	7	268	186	203	123	53	4
Calgary	252	0	0	152	88	139	146	33	5	0
Edmonton Metropolitan	75	0	5	29	268	90	85	104	29	0
MacKenzie	290	17	10	526	769	263	47	0	0	0
Municipal Affairs	708	0	13	442	2059	1022	365	98	2	0
Oldman River	45	10	0	18	323	165	55	51	84	0
Palliser	46	0	0	22	187	162	112	59	0	0
Red Deer	609	2	0	133	399	213	188	78	62	46
SE Alberta	9	0	0	54	66	36	15	18	0	0
S Peace	339	0	10	162	1195	217	126	25	0	0
Yellowhead	823	0	11	305	647	113	77	14	0	0

Note: Rural Farmland Assessment (RFA) is a productivity rating which rates the productivity of a parcel as a percentage of the most productive land in the province. The RFA ratings in these tables represent a weighted average for the quarter section.

D.1 Multi Parcel Country Residential
RPC by Farmland Assessment (quarter) (Acres)

	Bush	Farmsite	Slough	07-30	31-50	51-60	61-70	71-80	81-90	91-99
Battle River	112	0	0	0	33	32	30	403	3	0
Calgary	154	0	0	0	0	0	0	0	0	0
Edmonton Metropolitan	71	0	0	81	28	0	0	7	0	0
MacKenzie	78	0	5	39	20	0	0	0	0	0
Municipal Affairs	889	0	0	189	180	11	0	0	0	0
Oldman River	26	0	0	0	0	36	0	0	0	0
Palliser	0	0	0	0	0	0	0	0	0	0
Red Reer	220	16	0	6	11	28	0	6	0	0
SE Alberta	122	0	0	79	7	21	14	0	0	0
S Peace	106	0	0	30	0	0	28	0	0	0
Yellowhead	468	0	0	168	344	11	6	0	0	0

D.2 Other Non-Agricultural Subdivision Activity
RPC by Farmland Assessment (quarter) (Acres)

	Bush	Farmsite	Slough	07-30	31-50	51-60	61-70	71-80	81-90	91-99
Battle River	153	182	--	--	92	45	157	--	--	--
Calgary	21	--	--	75	30	2	14	--	--	--
Edmonton Metropolitan	163	--	--	21	108	--	201	--	--	--
MacKenzie	16	--	--	72	44	21	--	--	--	--
Municipal Affairs	278	--	--	119	218	168	63	15	--	--
Oldman River	115	4	--	3	62	5	54	18	--	3
Palliser	83	--	--	--	35	1	--	5	--	--
Red Deer	174	--	--	63	135	308	90	47	--	1
SE Alberta	75	--	--	101	138	46	2	30	--	--
S Peace	80	--	--	12	132	--	17	--	--	--
Yellowhead	146	--	--	8	84	178	1	--	--	--

E.0 Single Parcel Country Residential
RPC by Farmland Assessment (site) (Acres)

	Bush	Farmsite	Ravine	Slough	07-30	31-50	51-60	61-70	71-80	81-90
Battle River	--	--	--	--	1008	--	--	--	--	--
Calgary	--	--	--	--	816	--	--	--	--	--
Edmonton Metropolitan	--	3	--	--	681	--	--	2	--	--
MacKenzie	69	53	--	--	1744	20	29	16	--	--
Municipal Affairs	781	2819	9	20	391	466	132	72	18	--
Oldman River	--	--	--	--	751	--	--	--	--	--
Palliser	--	9	--	--	524	17	--	32	--	6
Red Deer	--	--	--	--	1730	--	--	--	--	--
SE Alberta	--	--	--	--	198	--	--	--	--	--
S Peace	148	502	--	--	1315	89	20	--	--	--
Yellowhead	367	374	--	12	1129	81	25	--	--	--

E.1 Multi Parcel Country Residential
RPC by Farmland Assessment (site) (Acres)

	Bush	Farmsite	Ravine	Slough	07-30	31-50	51-60	61-70	71-80	81-90
Battle River	--	--	--	--	613	--	--	--	--	--
Calgary	--	--	--	--	154	--	--	--	--	--
Edmonton Metropolitan	--	--	--	--	168	--	20	--	--	--
MacKenzie	28	20	--	--	94	--	--	--	--	--
Municipal Affairs	745	111	--	33	375	5	--	--	--	--
Oldman River	--	--	--	--	62	--	--	--	--	--
Palliser	--	--	--	--	--	--	--	--	--	--
Red Deer	--	--	--	--	287	--	--	--	--	--
SE Alberta	--	--	--	--	244	--	--	--	--	--
S Peace	15	--	--	--	149	--	--	--	--	--
Yellowhead	334	20	--	--	637	--	6	--	--	--

E.2 Other Non-Agricultural Subdivisions
RPC by Farmland Assessment (site) (Acres)

	Bush	Farmsite	Ravine	Slough	07-30	31-50	51-60	61-70	71-80	81-90
Battle River	--	--	--	--	629	--	--	--	--	--
Calgary	--	--	--	--	142	--	--	--	--	--
Edmonton Metropolitan	--	--	--	--	161	--	--	--	--	112
MacKenzie	--	--	--	--	287	--	--	--	--	--
Municipal Affairs	243	56	--	32	363	72	11	98	--	--
Oldman River	--	--	--	--	264	--	--	--	--	--
Palliser	--	--	--	--	119	--	--	--	5	--
Red Deer	--	--	--	--	817	--	--	--	--	--
SE Alberta	--	--	--	--	391	--	--	--	--	--
S Peace	--	--	--	--	190	47	3	--	--	--
Yellowhead	7	--	--	--	376	3	--	--	--	--

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